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A mathematical model of opinion change was tested interrelating 3 fundamental factors affecting social influence: the weight accorded the influencer's opinion by the subject (the communicator's credibility); the weight the subject accorded his own initial viewpoint (the subject's self-confidence); and the size of the difference in opinion between the subject and the communicator (the opinion discrepancy). A total of 60 responses was obtained from the 39 subjects who were students in an introductory course in psychology. The experiment was successful and established which of the formulae tested predicted opinion change more precisely. A second study, stimulated by the first, is on "The Relationship of Inertia to Toward and Away Forces in Opinion Change: An Extension of the 'Balanced Force' Model." Findings suggested that "three social influence factors added their effects, and the inertia force--commitment--had more than just a resistance effect: it had an away effect. This finding is consistent with the boomeranging found in the previous study." (Author/JS)

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THREE FUNDAMENTAL FACTORS AFFECTING SOCIAL INFLUENCE

Herbert J. Greenwald
Boston University
640 Commonwealth Avenue
Boston, Mass., 02215

March, 1969

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
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FINAL REPORT

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The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessary represent official Office of Education position or policy.

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PREFACE

This grant was commissioned to test a mathematical model of opinion change inter-relating three fundamental factors affecting social influence. These three factors were: (a) the weight accorded the influencer's opinion by the subject (the communicator's credibility), (b) the weight the subject accorded his own initial viewpoint (the subject's self-confidence), and (c) the size of the difference in opinion between the subject and the communicator (the opinion discrepancy). The experimental test of this model was successful, as will be indicated in the present report.

A paper describing the test of this model is currently being reviewed by the Public Opinion Quarterly under the title, "A 'Balanced Forces" Mathematical Model of Opinion Change, Joining Hovland and Lewin." In abbreviated form, this paper has been accepted for oral presentation at the Eastern Psychological Association Convention to be held in Philadelphia, April 12, 1969.

During the course of the present grant much additional work was completed. One of the studies (Greenwald, O'Connell, & Regina) was stimulated by the math model and is described in the present report. Some of the additional papers have already been published; some of the others are currently being evaluated for publication by educational and psychological journals; the remainder will shortly be submitted to journals.

A). Papers completed under this grant which have already been published:

(1) "Absolute versus Relative Attractiveness of Decision. Alternatives', Journal of Personality and Social Psychology, 1968, in press;
(2) "Ego-involvement in Attitude Change" (Contemporary Psychology, 1968, 13, 601-602) and;
(3) "The Basic Assumptions of Dissonance Theory", Psychological Reports, 1968, 22, 888.

B). Papers accomplished under this grant which are currently being reviewed by educational and psychological journals.

(1) A "Balanced Forces" Mathematical Model of Opinion Change, Joining Hovland and Lewin" (being reviewed by the Public Opinion Quarterly;
(2) "A Short Social Desirability Scale" (with Yoichi Satow, being reviewed by Psychological Reports;

(3) Dichotomous and Likert Scales Provide The Same Information?, (with Stephen M. O'Connell, being reviewed by Psychological Reports;
and
(4) "Is Agreement The Same as Social Desirability?" (with John D. Clausen, being reviewed by Psychological Reports.

C). Research begun during this grant which will soon be submitted to journals.

(1) "Strategies Useful in Developing Attitude and Personality Inventories",
(2) "Attitude of College Drug Users Toward Sex and Education" (with Judith R. Sills); and
(3) "Does Transparency Necessarily Invalidate A Self-Report Inventory?"

This represents a total of 11 papers which Grant 7-8283 supported. The author wishes to express his appreciation to the Office of Education for the support which helped make these studies possible.

The first study presented in this report is the one which was originally contracted for (the Math Model). The second paper is a study which was stimulated by the Math Model (Greenwald, O'Connell, & Regina). The other studies are not presented in this report owing to their concern with issues other than those discussed in the grant proposal.

A "Balanced Forces" Mathematical Model of Opinion Change, Joining Hovland and Lewin

SUMMARY

This study suggests that the unspecified coefficient of proportionality in Anderson and Hovland's (1957) mathematical model of opinion change might be a balance of two forces, the weight a subject accords his initial opinion (W_i) vis-a-vis the weight he accords the communicator's opinion (W_o). This led to the formula: Opinion change = $\frac{W_o}{W_i + W_o}$.D, "D" being the difference in opinion between the subject and the communicator.

To test this Lewinian-type extension of the Anderson-Hovland model, subjects indicated their confidence in their initial opinion (W_i) and their confidence in another person who had expressed an opinion on the same issue (W_o). Results indicated that when this coefficient was employed, the precision of predicted opinion change was greater than when the keystone of the original model, opinion discrepancy alone, was employed. Nevertheless, the model needs refinement. For example, predicted opinion change was greater than the actual amount of opinion change. This and other findings suggest that a "boomerang", and possibly an "overchange", factor may be needed in the model.

The model also needs to be tested with ego-involving issues and with bipolar measures of attitude change. In addition, other measures of W_i and W_o, such as subjects' commitment to their initial opinion and subjects' trust in the communicator ought to be studied.

INTRODUCTION

Lewin's (1951) quasi-stationary equilibrium concept postulates that forces in nature oppose one another. In the dynamics of opinion change, two such opposing forces might be: (a) the influencer's "creditability" (the reliance an individual places in the communicator), and (b) an individual's commitment to his own opinion. Both appear to strongly affect the degree to which an individual changes his opinion: the greater the communicator's creditability, the more an individual changes his opinion toward him (Hovland and Weiss, 1951; Bergin, 1962; Aronson et al., 1963), and the greater an individual's commitment to his own beliefs, the less he changes those beliefs (Freedman, 1964; Greenwald, 1964).

The present study treats these two variables as weights: the communicator's creditability as the weight of the other person's opinion (W_o), and the subject's commitment to his own beliefs as the weight of the subject's initial opinion (W_i). Thus, W_o is a "toward force" and W_i an "anchoring force". The net balance of W_o and W_i

would then affect the degree to which opinion change occurs: the greater W_c and W_i, the greater the change, and the greater W_i than W_o, the less the change.

One may hypothesize, then, as Anderson and Hovland (1957) did, that the degree to which a person is persuaded is a proportion of the opinion difference.[2] Their mathematical model, however, left this "coefficient of proportionality" unspecified. The present study proposes a coefficient of proportionality for the Anderson-Hovland model generated from the Lewinian—W_o/W_i—"balance of forces" concept. Perhaps the simplest way to mathematically express opinion change as a proportion of the opinion difference (D), in which the proportion is a function of the relationship of W_o and W_i, is:

$$\text{Opinion change} = \frac{W_o}{W_o + W_i} \cdot D.$$

That is, persuasion is predicted to be a function of how much weight the subject accords the communicator in relation to the total weight of "toward" and "anchoring forces". This formulation is used as a starting point because it suggests that a person will be persuaded half the opinion difference when W_o equals W_i, that is, when the communicator has the same creditability for an individual as that individual has regard for his own opinion.

The model also implies that when these and other factors are constant, the amount of opinion change will be a simple function of the size of the opinion discrepancy. This implies that other factors account for an individual's "boomeranging" (changing away from the communicator) or his "overchanging" (going beyond the communicator's opinion).[3]

Thus the model is incomplete. In spite of its limitations, however, it may be useful in indicating whether or not combining some of Lewin's and Hovland's conceptions in a "balanced forces" approach is an appropriate direction to pursue.

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[2] The difference of opinion between an individual and communicator also seems to affect changes of opinion (Goldberg, 1954; Fisher and Lubin, 1958; also other studies noted above). This factor, the individual's reliance on his own opinion (W_i), and the individual's trust in the communicator (W_o) are three of the most consistent opinion change factors.

[3] Additional factors might also account for non-monotonic opinion change when the opinion difference becomes extreme (Sherif and Hovland, 1961).

METHOD

Prior to the experimental session, male and female students from an introductory psychology course gave their opinions on a number of issues, and rated their reliance on their opinions using a 15-point scale (1=practically no reliance, 15=extreme reliance). Using the same scale, the subjects also rated their reliance on three unnamed people, identified by occupation only,[4] who might also express an opinion on the same issues. Two weeks later, students in two randomly selected sections of the class were asked to help standardize a test of memory to help develop "instruments for measuring memory ability ... which are simple and quick, yet interesting." Subjects were permitted two minutes to read the first page of a bogus test book, 1-1/2 minutes for the second page, and one minute for the third page. Each of the three pages summarized a man-on-the-street interview purported to have appeared in a recent local newspaper. The interviewee was an unnamed person in one of the three occupations, above.

The passage presented an issue in which the interviewee's opinion differed from the average subject's opinion by either a small, moderate, or large amount. For example, one passage had the interviewee stating that, in his opinion, "It will take about 32 years to invent a new musical instrument." Since most subjects initially maintained that this would take between one and ten years, this statement resulted in an opinion difference of between 22 to 31 years in this instance.[5]

At the end of each passage, the subject was asked for his own opinion on the issue. The dependent variable, opinion change, was obtained by comparing this post-treatment opinion with the opinion the subject had expressed on the initial survey. If the subject changed toward the communicator's opinion, his change was considered positive. If change was away from the communicator, it was considered negative.

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[4] The three occupations, medical doctor, policeman and garbage collector, were chosen because they encompassed the entire range of occupational prestige in the N.O.R.C. (1947) results. In a range from 96 to 33, the average ratings of prestige for these occupations were 93, 67 and 35, respectively.

[5] To further aid the deception, subjects were asked to underline the most important phrase in the passage. The purpose of the disguise was to prevent subjects' awareness of the test's intent from affecting their response.

The test employed three different issues selected from twelve that were pre-tested. The criteria for selection of these issues were: (a) topics which permitted the manipulation of wide opinion differences, and (b) a consistent central tendency among most subjects' opinions. The three opinion questions selected were: "How many years do you think it will be before ...: (a) a new musical instrument is invented? (b) a country will land a man on the planet Mars? (c) an airplane will be invented which will fly 10,000 mph?" The test employed these particular questions partly to test the limits of the model across different issues, and partly to mitigate possible effects of individual issues.[6]

It was randomly determined which subject received what communication, who the communicator in each instance was, and in which order of presentation the communication appeared. Each subject was led to believe that he was responding to the same material as all the other subjects were. Subjects were also tested on their recall of the passages in order to maintain the fiction that this was indeed a test of memory. Then subjects were asked to indicate the extent of their reliance on their opinions and on the communicator of each issue. Finally, to determine their suspicions about the test, the subjects were asked, "For what other purpose could this test be used?" A group interview was also conducted for this intent. After the interview, subjects were debriefed and the study explained to them.

Analyses. The amount each subject changed his opinion from pre- to post-measure (actual change) was compared with the amount of opinion change predicted from the formula (predicted change). W_i, the weight the subject accorded his initial opinion, was the subject's reliance on his initial opinion as indicated in the survey pre-measure. W_o, the weight subjects accorded the other person's opinion, was their initial reliance on the unnamed person of each occupation. D was the difference between the viewpoint of the communicator and the subject which initially existed.

A total of 60 responses were obtained from 39 subjects. The results for all three issues were combined in the analysis, with each subject's change of opinion on each issue treated as an independent score.

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[6] The second and third pages of the test booklet presented different issues and different communicators. For deception, post-opinions often were not asked; their presence or absence was determined randomly.

RESULTS

Reliability. The more widely each element in the formula (W_o, W_i and D) ranges, the greater the number of combinations which can be examined, and, therefore, the more appropriate the test of the model. In the present study, the distribution and range of each element were excellent. For example, the range of subjects' reliance on the communicator (W_o) was well distributed across the entire 15-point scale, and the range of subjects' self-reliance (W_i) was distributed between 1 and 14. Also, the opinion difference (D) between subject and communicator on the three questions varied from one to 92 years.

The post-experimental interview uncovered only one subject who had guessed part of the true nature of the study and only two subjects who had vague suspicions. Thus, the disguise apparently prevented subjects from becoming aware of the study's intent. The analyses include all subjects' data.

Predicted opinion change. Predicted opinion change was treated as a four-level independent variable, using four successive "natural groupings" which occurred in the 60 predictions that were calculated from the formula.[7] For these four natural groupings of predicted change, mean actual change, the dependent variable in this analysis, was -13.27, +2.82, +13.00, and +38.50 years, respectively ($F=55.22$, $df=3/56$, $p < .0001$). By comparison, actual opinion change for four levels of the opinion difference, that is, when the present coefficient was not included, was +4.47, +4.42, +6.77, and +25.44 years, respectively ($F=3.39$, $df=3/56$, $p < .05$).[8] That is, the proposed coefficient improved the accuracy of the prediction of opinion change over that which would be predicted by using the only specified variable in the Anderson-Hovland model--opinion difference (from an F of 3 to an F of 55). Thus, the

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[7]The criterion for determining a "natural grouping" was that a cluster of scores appear which was no smaller than ten in number. For the four natural groupings of predicted opinion change, the average predicted change was +11.08, +12.41, +21.16, and +29.37 years (cell ns of 11, 22, 11, and 16, respectively).

[8]Mean opinion difference for the four natural groupings were 3.88, 21.08, 31.00 and 76.56 years (cell ns of 17, 12, 13, and 18, respectively).

balanced-forces coefficient successfully modified predictions based on the opinion difference in the direction intended by the Anderson and Hovland (1957) model.

However, the amount of opinion change predicted by the present model was significantly greater than the actual change which occurred. Mean predicted change was +17.75 years, compared with the actual change of +10.27 years (t=4.09, df=58, $p < .001$, in a correlated-measures analysis).

CONCLUSIONS AND RECOMMENDATIONS

The present model, which balanced the weight the subject accorded his initial opinion with the weight he accorded the communicator's opinion, predicted opinion change more accurately than did the original model without a specified coefficient. That is, the proposed coefficient permitted the possibility of predicting small opinion change where large differences of opinion existed and vice-versa.

This model needs further refinement, however. For example, it over-estimates opinion change. A possible remedy might be to employ a different ratio of W_o and W_i or, perhaps, to add a "boomerang" factor.[9] If the model is to include a boomerang factor, perhaps an "overchange" factor should also be included to balance it, in keeping with the quasi-stationary equilibrium concept.[10]

In addition to providing the opportunity to add variables,

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[9]The boomerang (-13.27 years) which occurred at the lowest level of predicted change was significant (t=2.53, df=10, $p < .05$) and might indicate that a predisposition for boomeranging exists when an individual has more confidence in himself than in the communicator. (cf. also Hovland and Weiss, 1951).

[10]With regard to non-monotonic change when opinion differences become very large, perhaps non-neutral issues or bipolar measures may be factors (Greenwald, 1968), or perhaps certain types of opinion difference may cause the subject to devalue the communicator or otherwise resist being influenced.

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the model also facilitates analysis of complex relationships, compared to the use of higher-order facotrial designs. Moreover, the mathematical formulation, besides indicating how internal forces might be arranged, and also improving the precision of opinion-change predictions, might possibly have a pragmatic use in actual persuasion situations, such as in the classroom, by suggesting strategies regarding the three elements W_o, W_i and D. For example, a teacher might increase his effectiveness by (a) seeking to enhance his creditability with his particular students, (b) seeking to understand his students' commitment to their previous attitude and then finding ways to soften their commitment, and (c) only after accomplishing (a) and (b) above, introducing the new material.

Measures of W_i and W_o. If, in a study, communicator creditability fails to have a persuasive effect, as is sometimes the case (e.g., Fine, 1957), the reason may be the study's not having taken the subject's initial opinion into account. Future studies might, therefore, run checks on W_i as well as W_o. Such checks, specific to each study, could also prove helpful in testing the extent to which the model might be generalized beyond the present instance. For example, to test W_i, one might examine subjects' self-expressed commitment to their initial opinion, and to test W_o, subjects' trust in the communicator might be examined (cf. Hovland, et. al., 1953).

The relationship of opinion-change theories to the present model. Festinger's (1957) dissonance theory expects opinion change to increase as the difference of opinion and the communicator's creditability increase, and to decrease when the strength of the individual's initial opinion heightens. These expectations of dissonance theory are consistent with those of the model as it is presently formulated.

On the other hand, social judgment-involvement theory (Sherif and Hovland, 1961) and the model are inconsistent. This is because the theory postulates, in part, that there is a heightened likelihood of non-monotonic opinion change when the opinion difference is extreme. However, the Anderson-Hovland model, upon which the present model is based, assumes that an increase in opinion difference will monotonically increase opinion change. Perhpas additional factors can provide the key to reconciling this difference.

Osgood and Tannenbaum's (1955) congruity theory expects that when a bipolar attitude is at issue, attitude change will be a function of the weight accorded a communicator and the difference of opinion between the subject and the communicator. These are two of the three factors examined in the present study. Future studies might employ a bipolar scale to measure attitude change, so that this approach can be compared with that of the present model.

The Relationship of Inertia to Toward and Away Forces in Opinion Change: An Extension of the "Balanced Forces" Model

Herbert J. Greenwald, Stephen M. O'Connell, and Edmund G. Regina

SUMMARY

As a first step in following through the suggestion made in the previous study that a boomerang factor be included in the mathematical model, it was necessary to determine how the elements interacted with one another. In a 2 X 2 X 2 design, aversiveness of the communication was the away (boomerang) force, communicator creditability was the toward force, and subjects' self-reported commitment to their initial opinion was the inertia force. It was found that the three forces added their effects, with "inertia" producing boomerang change rather than adherence to the initial opinion. This led to a revision of the mathematical model and also suggested that inertia can be a reactive, not only a passive force. A strategy for social influence was also suggested.

INTRODUCTION

The previous study suggested that factors affecting social influence may balance one another in the manner of Lewin's (1951) quasi-stationary equilibrium. That study tested one such formulation. In it, communication creditability was what might be described as a "toward force", that is, a force impelling a subject to change his opinion toward that of a discrepant opinion. Counterpoised with this toward force was subjects' self-confidence in their initial opinion, which might be described as an "inertia force", that is, force which might impel a subject to remain anchored to his initial opinion. That empirically successful test also indicated that boomerang change, that is, change away from a discrepant opinion, may need to be included in the formulation.

In a sense, boomerang, or "away change", might be analogous to physics' third thermodynamic law, in which every action is thought to generate an opposite reaction. If

a discrepant opinion is the initial action which generates an opposite reaction, then the reaction must occur under particular circumstances, since opinion discrepancies by themselves have tended to generate toward, rather than away change (see Cohen, 1963, pp. 29-32). Overtones of this are implicit in Sherif & Hovland (1961) where they theorize that opinion discrepancy produces boomerang change only when the issue is highly ego-involving.

Concern about the role of away effects led to the present study. In attempting to improve upon the previous model it would be helpful to know how the three postulated quasi-stationary elements--the toward, away, and inertia forces--are interrelated.

One possibility is that "inertia" prevents opinion change in any direction, neither toward nor away from the discrepant communication. That is, the three forces might interact: when graphed, divergent lines would emanate from zero change at high inertia. Put another way, positive and negative change might increase as attachment to the initial opinion diminished. A second possibility might be that opinion change is a simple additive function of the toward force minus the away and inertia forces. That is, the three forces might summate: when graphed, parallel lines would occur, with lessened or boomerang change as the inertia and away forces intensified. To determine which of these two, or other possibilities, might be the most likely, the following study was undertaken.

METHOD

Subjects were 126 freshmen.[1] They were informed about the (bogus) Boston Student Forum and its purported purpose, to present lecture-discussion programs. These subjects were asked to help the Forum determine the appropriateness of proposed topics for future talks. On this pretext, subjects indicated their opinions on a number of issues, including the key one, "Food products made from seaweed should immediately be made available for general consumption." This issue was chosen because pretests indicated that subjects were likely to have an almost neutral view-

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1. The authors wish to thank Vaughn Gulo of Northeastern University for permitting his students to serve as subjects in this study.

point on this matter. This near neutrality was desired because shifts in opinion could readily occur in either direction, toward or away from the communicator's opinion. The other issues among which the seaweed issue was buried, such as legalization of marijuana, were purposely more ego-involving than the seaweed issue in order to help distract the subjects from their responses to the latter issue. Subjects' responses to these questions were obtained on an 11-point Likert-type scale (-5 = extremely disagree, +5 = extremely agree). The subjects were also asked how committed they were to their opinions on each of these issues, on a scale which ranged from 0 (not at all committed) to 10 (maximum commitment).

Subjects then read a description of someone who was to speak on the seaweed issue, and his opinion. This opinion was extreme and therefore differed from the viewpoint held by the subjects. This paragraph manipulated the speaker's creditability by describing the speaker as either a Harvard University medical authority; a food company employee with expretise; or a college sophomore (high, moderate, and low communicator creditability, respectively). This speaker's opinion in all cases was that "Programs should be developed immediately to process seaweed and put it on the market for general consumption".

The paragraph that followed this description of the speaker presented an opposite viewpoint, designed to manipulate aversiveness--an away force--with regard to the speaker's opinion. A (bogus) doctor from Walter Reed Hospital stated that: seaweed was contaminated with nuclear fallout and, when eaten, would cause festering sores, monster babies, and leukemia; or seaweed was contaminated with fallout and, when eaten, would cause imperfect children and low life expectancy; or seafood was related to health problems--no mention was made of nuclear contamination (high, moderate, and low aversiveness, respectively).[2]

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2. In the Janis & Feshbach (1953) study, aversive consequences were threatened if subjects did not change their opinion, while in the present study aversive consequences were threatened if they did change.

To maintain the Forum deception and also to check on how these three forces might affect receptivity to information, the subjects were asked the likelihood of their attending the talk were it held at a convenient time. They were also, again, asked their opinion about the seaweed question in order to determine the amount they changed their opinion.

A different combination of the three independent variables occurred in each booklet. To avoid experimenter bias, these booklets were distributed randomly and the subjects in the various conditions were tested simultaneously. The results were analyzed by analysis of variance for unequal cell frequencies (Winer, 1962).

RESULTS

Reliability checks. Subjects in the low, moderate, and high communicator creditability conditions indicated that their confidence in the communicator was, on the average, 37.55% (on a scale from 0 to 100%), 54.86%, and 68.78%, respectively ($F = 21.88$, $df = 2/123$, $p < .0001$). On the other hand, subjects in the three aversiveness conditions did not show reliable differences on the manipulations' check. Subjects in the low, moderate, and high aversiveness conditions indicated that their felt threat from eating sea products was, on the average, 30.04%, 31.47%, and 32.51%, respectively ($F < 1$).[3]

Because of this, and to simplify the presentation of the results, it was decided to convert the entire design to a 2 X 2 X 2 internal analysis, basing the independent variables on the check questions. In this, subjects' responses to the check questions were rank ordered and then split at the median score to provide low and high levels for each of the three variables.

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3. Perhaps a more direct check on felt threat from nuclear contaminated seaweed might have indicated more effectiveness for the aversiveness manipulation than appeared with responses to the above question.

The average difference in opinion between the subject and the communicator moderate initial opinion was nearly neutral as desired ($\bar{M}$=-0.42 on the -5 to +5 scale).. Thus only small changes in opinion could be expected, especially since the subjects rendered their opinions just a few minutes prior to being asked their post-experimental opinion. Such small changes were not a drawback, since what was being sought was the relationship of the three variables, rather than the amount of opinion change they caused.

The interrelationship of toward, away, and inertia forces with regard to opinion change. As Figure 1 shows, a parallel function resulted, indicating that the three forces summed their effects, rather than interacting. There was no hint that toward or away opinion change might have been hindered by the subjects' initial commitment. Rather, the more committed the subject was the more he boomeranged (low commitment $\bar{M}$ = +0.09 on the 11-point scale, while the high commitment $\bar{M}$ = +0.69; F = 3.31, df = 1/118, $p < .08$). This almost significant boomerang change under high commitment will be discussed later.

As hoped, aversiveness contributed an away force ($\bar{M}$ low aversiveness = +0.16, $\bar{M}$ high aversiveness = -0.69, F = 4.82, df = 1/118, $P < .05$). And communicator creditability contributed expected toward effect ($\bar{M}$ low creditability = -1.16, $\bar{M}$ high creditability = +0.63; F = 21.51, df = 1/118, $p < .001$). Thus, the results suggested that the three forces had really only two effects--either they changed opinion toward or away from the communicator. And these two effects added together algebraically, in the manner of a quasi-stationary equilibrium. There was no anchoring to the initial opinion under high commitment, which one might have expected were commitment to imply attachment to the subjects' initial opinion.

DISCUSSION AND CONCLUSIONS

The results suggested that the three social influence factors added their effects, and the inertia force--commitment--had more than just a resistance effect: it had an away effect. This finding is consistent with the boomeranging found in the previous study, which also occurred when that inertia force, subjects' confidence in their initial opinion, was high.[4]

Since high commitment has not generally produced strong away change (e.g., Freedman, 1964; Greenwald, 1964), and since aversiveness was present in all of the present study's experimental conditions, perhaps inertia forces manifest an away effect only when away forces predominate. That is, "inertia" may produce the expected static resistance to change when toward forces predominate, but a dynamic boomerang reaction may occur when away forces predominate.

That a dynamic effect was present under high inertia is also indicated in subjects' statements about how likely they were to attend the lecture. When they were highly committed to their initial opinion ($\underline{M}$ = 50.72%) they were more likely to attend the talk than when they were not very committed ($\underline{M}$ = 38.33%; $\underline{F}$ = 4.59, $\underline{df}$ = 1/118, $\underline{p}$ <.05). That is, the more committed the subjects were to their own opinion, the more willing they were to go.

This implication that inertia can be a reactive force changes the conception of inertia as employed in this paper, since factors such as commitment and self-confidence imply an anchoring of a subject's initial position.

The results suggest a direction for improving the previous model. Perhaps:

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4. The boomeranging there occurred under high inertia (high self-confidence in the initial opinion) when both the toward force (communicator creditability) and the opinion discrepancy were small.

Opinion change = $f\left(\frac{t - a - i}{t + a + i}\right)$ .D, where t = toward force, a = away force, i = inertia force, and D = the opinion difference.[6] Here, opinion change is a function of the net amount of toward force vis-a-vis all of the forces present. This ratio, when applied to the size of the opinion difference might then relate to how much a person changes his opinion.

Some implications for social influence. Since it appears that aversive forces generate stronger reactions than approach forces (e.g., Miller, 1944),[7] it may be even more important for a social influencer to concentrate on avoiding away forces than to developing the toward message. And, because of the possible boomerang when inertia is strong in the target person, it would probably also be important to lessen the other person's commitment before introducing the persuasive message. Thus, teachers, administrators, and advertisers might possibly have greater influence were they to develop a better understanding of how to avoid generating away forces and lessening the recipient's commitment.

Since the present formulation does not, in itself, suggest empirical variables which might relate to the three forces, it might be useful to consider a few possibilities. Toward and away forces, aside from positive and negative reinforcement of an existing attitude, might include pleasantness and unpleasantness of the communicator, respectively (see Cohen, 1963, pp. 37-39; Savell, 1969) The toward forces might be amplified by the subject's need for social approval (Crowne & Marlowe, 1964). The away forces might be amplified by coercion (cf. reactance theory, Brehm, 1966). Inertia might be intensified by a crystallization of the subject's opinion (such as by having held the opinion for a long while), or by a rootedness of the opinion (such as by having the opinion tied together with many other aspects), or by a need to justify the opinion (cf. dissonance theory, Festinger, 1957).

6. In the basic model described in the previous paper, that is, opinion change = f ($D \cdot W_o / W_o + W_i$), "t" would correspond to "w_o", and "i" would correspond to "W_i". The proposed revision will be checked before submitting the present study for publication.

7. The toward and away forces were not labelled approach and avoidance forces because of the latters' emphasis on goal behavior (a discrepant opinion need not be a goal), and also because their use might lead to a confusion between an away forces and resistance (an inertia force).

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